



SERVICE INFORMATION LETTER

AVOX Systems

Formerly Scott Aviation, Inc.

PASSENGER OXYGEN SYSTEM LEAKAGE DURING LOW TEMPERATURE OPERATION OF FLOW CONTROL UNITS

Purpose: The purpose of this Service Information Letter is to provide information that may be useful in finding and correcting difficult-to-locate, low-level leakage within a passenger oxygen system that contains one or more Scott Flow Control Units (FCU's).

If the passenger oxygen system loses pressure during flights, or while on the ground during cold weather (below 32°F/0°C), there is a possibility that a FCU may be leaking at the first stage diaphragm assembly.

Most low-level (slow) oxygen leakage from passenger oxygen systems occurs at leakage at connections in the system. However, it has been reported that certain external leakage occurring when the FCU's are cold has resulted from leakage past the first stage diaphragm assembly. This leakage, if it does occur, may be corrected by removing and then re-seating the diaphragm assembly.

It was discovered that the first-stage diaphragm could be installed so that no leakage is present at normal room temperature. However, when the FCU was exposed to lower temperatures (below 32°F/0°C) a pinched or wrinkled first-stage diaphragm could allow a leakage path. When the FCU was returned to ambient temperature leakage past the diaphragm stopped.

New Contact Information (September 1, 2004)

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Effectivity: This Service Information Letter applies to all configurations of the 803661 Series, 803662 Series and the 803663 Series Flow Control Units (FCU's).

FLOW CONTROL UNIT PART NUMBER		AIRCRAFT USED ON
SCOTT AVIATION	BOEING	
803661 Series	60B50010-XX	747-400, 757-200
803662 Series		
803663 Series		

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Symptoms:

- Increase in frequency for servicing the oxygen system.
- Difficult-to-locate leakage that occurs only during low-temperature (less than 32°F/0°C) operation.
- Leakage that is not detectable when employing usual ground-level inspection techniques at ambient temperatures.
- The type of leakage covered by this Service Information Letter is external leakage only and does not result in the deployment of masks from the Passenger Service Units (PSU's).

Recommendation:

- Troubleshoot the high and medium pressure portions of the passenger oxygen system in the usual manner. Be sure to inspect all fittings, unions and valves for external leakage.
- If no other external system leakage is found, suspect the Scott FCU as a possible source of leakage.
- If the FCU is accessible and the ambient temperature is less than 32°F (0°C) the FCU may easily be tested for external first stage leakage while still mounted in the aircraft. See the heading "Testing an Installed Flow Control Unit."
- If on-board testing of the FCU is impractical, or if the ambient temperature in which the FCU resides is greater than 32°F (0°C), remove the FCU from the aircraft and test the unit in accordance with instructions presented under the heading "Shop Testing a Flow Control Unit."

NOTE: DO NOT remove the FCU unless all other possible sources of system leakage have been eliminated

Testing an Installed Flow Control Unit:

NOTE: To effectively test an installed FCU for first-stage external leakage the FCU must be exposed to an ambient temperature of less than 32°F (0°C).

The upstream portion of the passenger oxygen system employing the suspect FCU must be pressurized to apply pressure to the inlet of the FCU. The FCU shall be in the OFF mode when performing the external leakage test described below.

Proceed as follows:

- 1) Install a length of 0.125 OD elastomer tubing in one of the two smaller holes of the first stage cap assembly; place the opposite end of the tubing in a container of water.
- 2) Using tape, cover the two remaining holes on the top surface of the first stage cap assembly.
- 3) Watch the water for signs of bubbles; leakage shall not exceed 0.010 lpm.
- 4) If leakage exceeds 0.010 lpm the FCU will have to be removed from the aircraft for corrective action. Refer to procedural steps (8), (9) and (10) under the heading "Shop Testing a Flow Control Unit" for removal and replacement of the diaphragm assembly.
- 5) If leakage **does not** exceed 0.010 lpm, then the FCU was not the source of system leakage. Troubleshoot remainder of the oxygen system for the possible source of leakage.

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Shop Testing a Flow Control Unit:

- A typical schematic showing the FCU test setup is presented in Figure 1 of this Service Information Letter. Follow the test procedure outlined below.

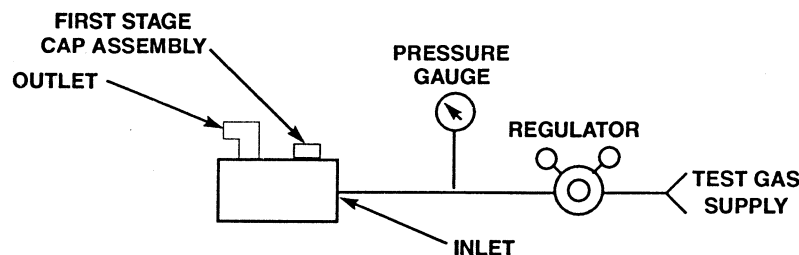


Figure 1 Test Setup - First Stage Leakage

Perform a leakage test of the FCU as follows:

- (1) Attach test equipment to the Flow Control Unit as shown in Figure 1 above.
 - (2) Install a length of 0.125 inch (3.18 mm) OD elastomer tubing in one of the two smaller holes of the first stage cap assembly; place the opposite end of the tubing in a glass of water.
 - (3) Using tape, cover the two remaining holes on the top surface of the first stage cap assembly.
 - (4) Cool the FCU to lower the temperature of the unit to approximately 32°F (0°C).
 - (5) Apply 500 psig (3.45 MPa) to the INLET port of the FCU.
 - (6) Watch the water for signs of bubbles; leakage shall not exceed 0.010 lpm.
 - (7) If excessive leakage (greater than 0.010 lpm) is detected, discontinue the application of pressurized oxygen to the FCU, bleed test system pressure and remove the FCU from the test setup.
 - (8) Refer to the appropriate CMM (35-21-84 for 803661 Series and 35-21-85 for 803662 & 803663 Series) for removal of the diaphragm assembly. If the diaphragm is damaged, replace the diaphragm.
- NOTE:** If the diaphragm has a small wrinkle along the outer edge, this is probably the cause of the leakage. When properly reinstalled, the wrinkle should disappear and leakage should stop.
- (9) If the diaphragm appears to be in good condition, reinstall the diaphragm assembly and associated components into the FCU in accordance to instructions provided in the latest revision of the appropriate CMM.
 - (10) Following reassembly of the FCU retest the unit in accordance with steps (1) thru (7) above.
 - (11) Functionally test the repaired FCU in accordance with the Testing & Fault Isolation Section of the appropriate CMM (see step 8 for applicable CMM.)
 - (12) Reinstall the FCU onto the aircraft and then perform a passenger oxygen system functional test following the procedure in your aircraft owner's manual.